

DERWENT-ACC-NO: 2000-292651

DERWENT-WEEK: 200459

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TITLE: Devices for continuous high-speed lamination  
of dry film  
transfer layer  
transfer  
operation and  
productivity  
resist as transfer layer, with accurate  
position but without uneven film thickness of  
layer, ease of peeling base film, stable

INVENTOR: MINAMI, Y; OKADA, N ; SHIMAZAKI, T ; YAMAZAKI, H ; YOSHIDA, T

PATENT-ASSIGNEE: HITACHI CHEM CO LTD[HITB] , HITACHI KASEI KOGYO KK[HITB]

PRIORITY-DATA: 1998JP-0278203 (September 30, 1998) , 1998JP-0257680 (September 11, 1998)

PATENT-FAMILY:

PUB-NO	MAIN-IPC	PUB-DATE	LANGUAGE
JP 3562468	B2	September 8, 2004	N/A
011	B05C 001/02		
→ WO 200015354	A1	March 23, 2000	J
027	B05D 001/28		
JP 2000569930	X	November 27, 2001	N/A
000	B05D 001/28		
KR 2001086385	A	September 10, 2001	N/A
000	B29C 065/48		
US 6500291	B1	December 31, 2002	N/A
000	B44C 001/165		
TW 486428	A	May 11, 2002	N/A
000	B32B 031/00		
KR 420390	B	February 26, 2004	N/A
000	G03F 007/34		

DESIGNATED-STATES: JP KR SG US

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO
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## APPL-DATE

JP 3562468B2	N/A	1999WO-JP04939
September 10, 1999		
JP 3562468B2	N/A	2000JP-0569930
September 10, 1999		
JP 3562468B2	Based on	WO 200015354
N/A		
WO 200015354A1	N/A	1999WO-JP04939
September 10, 1999		
JP2000569930X	N/A	1999WO-JP04939
September 10, 1999		
JP2000569930X	N/A	2000JP-0569930
September 10, 1999		
JP2000569930X	Based on	WO 200015354
N/A		
KR2001086385A	N/A	2001KR-0703015
March 8, 2001		
US 6500291B1	N/A	1999WO-JP04939
September 10, 1999		
US 6500291B1	N/A	2001US-0786868
March 12, 2001		
US 6500291B1	Based on	WO 200015354
N/A		
TW 486428A	N/A	1999TW-0115681
September 10, 1999		
KR 420390B	N/A	1999WO-JP04939
September 10, 1999		
KR 420390B	N/A	2001KR-0703015
March 8, 2001		
KR 420390B	Previous Publ.	KR2001086385
N/A		
KR 420390B	Based on	WO 200015354
N/A		

INT-CL (IPC): B05C001/02, B05D001/28 , B29C065/48 , B32B031/00 ,  
B44C001/165 , G03F007/34

ABSTRACTED-PUB-NO: WO 200015354A

## BASIC-ABSTRACT:

NOVELTY - A lamination device for continuous high-speed lamination of dry film resist as transfer layer comprises a lamination mechanism, a substrate transport mechanism and a peeling mechanism. The lamination and peeling mechanisms are consisted of a pair of oppositely placed lamination rolls,

together with a guide roll for peeling off the base film located forward of the lamination rolls in the transport direction of the substrate on the lengthy laminate film side.

DETAILED DESCRIPTION - A lamination device comprises a lamination mechanism, a substrate transport mechanism to supply empty substrates at defined intervals substrate to the lamination mechanism for forming a transfer layer on a base film from a lengthy laminate film after supply to surface of the substrate by a transport mechanism, and a peeling mechanism for continuously peeling off the base film following lamination. The lamination and peeling mechanisms are consisted of a pair of oppositely placed lamination rolls, together with a guide roll for peeling off the base film located forward of the lamination rolls in the transport direction of the substrate on the lengthy laminate film side.

INDEPENDENT CLAIMS are also included for:

(i) a lamination method comprising the formation of a transfer layer on the base film after supplying a lengthy laminate film to surface of a substrate fed through a specific empty gap between opposing pair of lamination rolls before peeling off the supplied base film, wherein diameter of the lamination rolls on the lengthy lamination film side in the substrate transport direction is larger than that of the guide roll for base film peeling, and particularly this smaller guide roll is used to peel the base film from the front end of the substrate while peeling of the base film from the rear end of the substrate is at the lamination roll on the lengthy lamination film;

(ii) a similar lamination method in which guide rolls are provided on the forward and backward of the lamination rolls in the transport direction of the

substrate in the lengthy laminate film side, and either the guide rolls or lamination rolls are movable vertically with a gap between the lamination rolls and lengthy laminate film;

(iii) another lamination method in which the guide rolls or lamination rolls are movable vertically with provision of a gap between the lamination rolls and lengthy laminate film and a heat-shielding plate inserted in the gap; and

(iv) yet another lamination method by continuously laminating a lengthy laminate film by formation of a transfer layer on the base film and cover film after continuously supplying empty substrates at defined intervals, without laminating the width corresponding to the gap between substrates and substrate end parts nor cutting off the cover film, heating bar being pressed on the cover film to separate the transfer layer with light exposure of the region of transfer layer corresponding to the above width without lamination to effect continuously peeling of the cover film, combined lamination of the regions which have not been laminated and the transfer layer position which is separated by heat-bar application, linking half-cut heat bar-pressed parts to the base film on the substrate, and light exposure of the cut base film together with peeling of the transfer layer.

USE - The device and method is for making film laminates e.g. with a dry film resist as transfer layer.

ADVANTAGE - With the device and method, it is possible to produce laminates with accurate transfer layer position but without uneven film thickness of transfer layer, ease of peeling base film, stable operation and productivity.

DESCRIPTION OF DRAWING(S) - The drawing shows the structure of a lamination

device.

Lengthy laminate film 1

film feed part with winding 2

inter-film substrate processing part 3

film accumulation part 4

cover film continuously peeling part 5

preheating part 8

lamination parts 9, 10

base film continuously peeling parts 12, 13

substrate transport part 15

CHOSEN-DRAWING: Dwg.1/18

TITLE-TERMS: DEVICE CONTINUOUS HIGH SPEED LAMINATE DRY FILM RESIST  
TRANSFER

LAYER ACCURACY TRANSFER LAYER POSITION UNEVEN FILM THICK  
TRANSFER

LAYER EASE PEEL BASE FILM STABILISED OPERATE PRODUCE

DERWENT-CLASS: A32 P42 P73 P78 P84

CPI-CODES: A11-B09A; A12-L02;

ENHANCED-POLYMER-INDEXING:

Polymer Index [1.1]

018 ; P0000 ; S9999 S1285\*R

Polymer Index [1.2]

018 ; ND07 ; ND05 ; J9999 J2915\*R ; J9999 J2960 J2915 ; K9392 ;  
K9416 ; K9483\*R ; K9676\*R ; N9999 N7192 N7023 ; N9999 N6939\*R ;  
B9999 B5334 B5298 B5276 ; B9999 B5389 B5276 ; Q9999 Q8684 Q8673  
Q8606

SECONDARY-ACC-NO:

CPI Secondary Accession Numbers: C2000-088313



PCT

特許協力条約に基づいて公開された国際出願

<p>(51) 国際特許分類 B05D 1/28, G03F 7/34, B29C 65/48</p>	<p>A1</p>	<p>(11) 国際公開番号 WO00/15354</p> <p>(43) 国際公開日 2000年3月23日(23.03.00)</p>
<p>(21) 国際出願番号 PCT/JP99/04939</p> <p>(22) 国際出願日 1999年9月10日(10.09.99)</p> <p>(30) 優先権データ 特願平10/257680 1998年9月11日(11.09.98) JP 特願平10/278203 1998年9月30日(30.09.98) JP</p> <p>(71) 出願人 (米国を除くすべての指定国について) 日立化成工業株式会社 (HITACHI CHEMICAL COMPANY, LTD.)(JP/JP) 〒163-0449 東京都新宿区西新宿二丁目1番1号 Tokyo, (JP)</p> <p>(72) 発明者; および (75) 発明者/出願人 (米国についてのみ) 岡田直人(OKADA, Naoto)(JP/JP) 嶋崎俊勝(SHIMAZAKI, Toshikatu)(JP/JP) 吉田 健(YOSHIDA, Takeshi)(JP/JP) 〒300-4247 茨城県つくば市和台48 日立化成工業株式会社 総合研究所内 Ibaraki, (JP) 南 好隆(MINAMI, Yoshitaka)(JP/JP) 山崎 宏(YAMAZAKI, Hiroshi)(JP/JP) 〒317-8555 茨城県日立市東町四丁目13番1号 日立化成工業株式会社 山崎事業所内 Ibaraki, (JP)</p>		<p>(74) 代理人 弁理士 穂高哲夫(HOTAKA, Tetsuo) 〒104-0045 東京都中央区築地4-6-3-402 Tokyo, (JP)</p> <p>(81) 指定国 JP, KR, SG, US</p> <p>添付公開書類 国際調査報告書</p>
<p>(54)Title: DEVICE AND METHOD FOR LAMINATION</p> <p>(54)発明の名称 ラミネート装置及びラミネート方法</p> <div data-bbox="485 1255 1182 1675" data-label="Diagram"> </div> <p>(57) Abstract</p> <p>A lamination device for performing a lamination method for a dry film resist as a transfer layer, comprising a substrate transport part (15), a substrate preheating part (8), lamination parts (9) and (10), an inter-film substrate processing part (3), a film feed part (2), a film accumulation part (4), base film continuous peeling parts (12, 13), and a cover film continuous peeling part (5), wherein a lamination is carried out by a pair of lamination rolls (9) and (10), part (15) being transport rolls, a base film is peeled off from a substrate after lamination, a guide roll for peeling off the base film (12) is located forward of the lamination rolls in the transport direction of the substrate, and the guide rolls are free to move vertically or laterally, whereby an angle between a substrate surface formed when the base film is wound up and the base film, i.e., the peeling angle of the base film can be changed to any angle.</p>		

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図 1

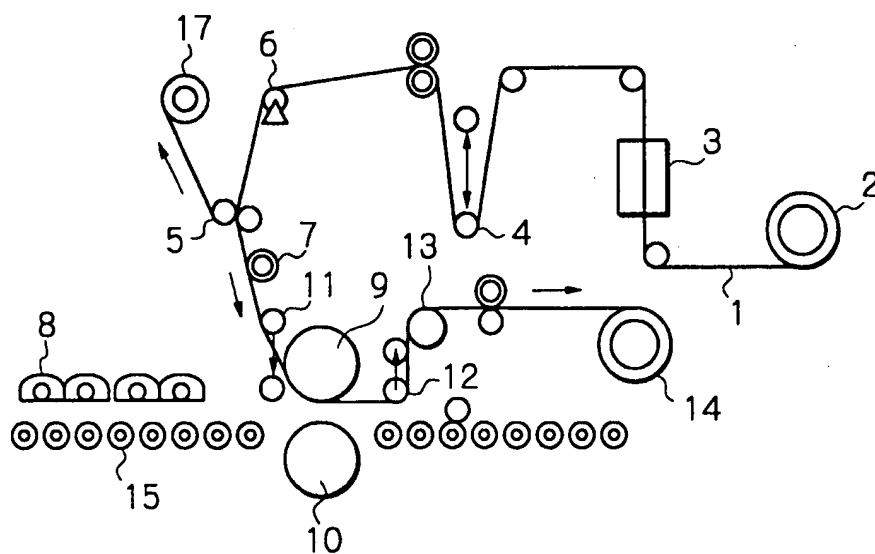


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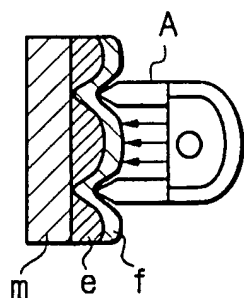
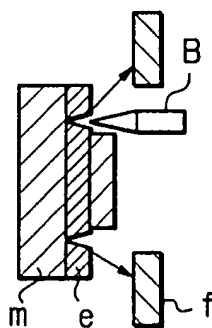


図 3



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図 4

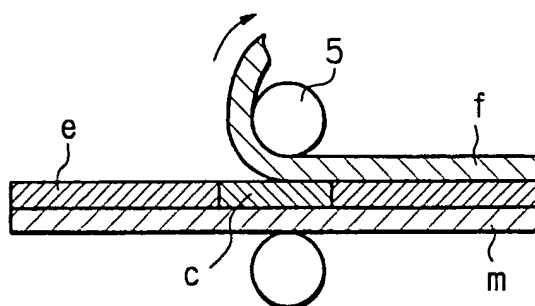


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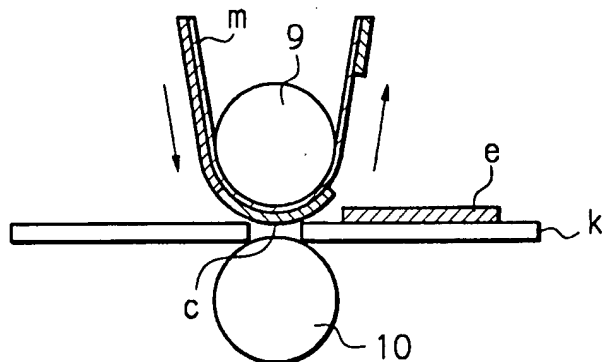
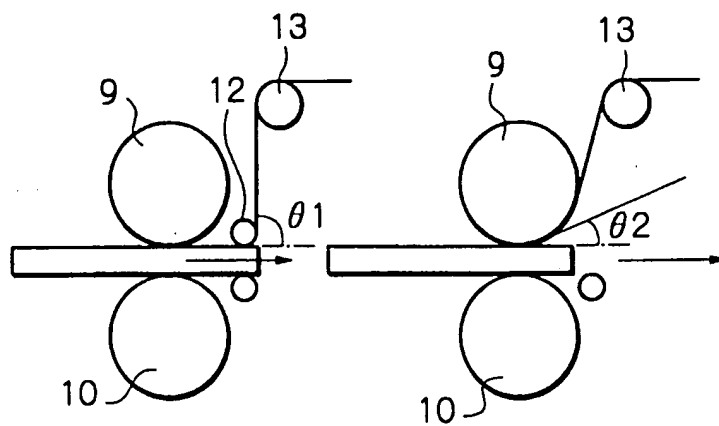


図 6





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図 7

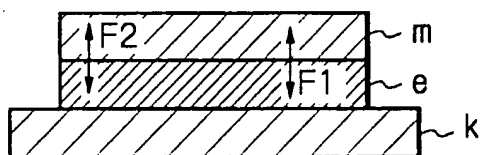


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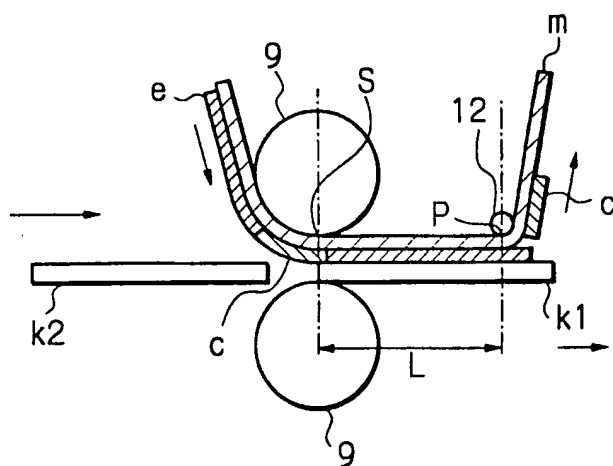
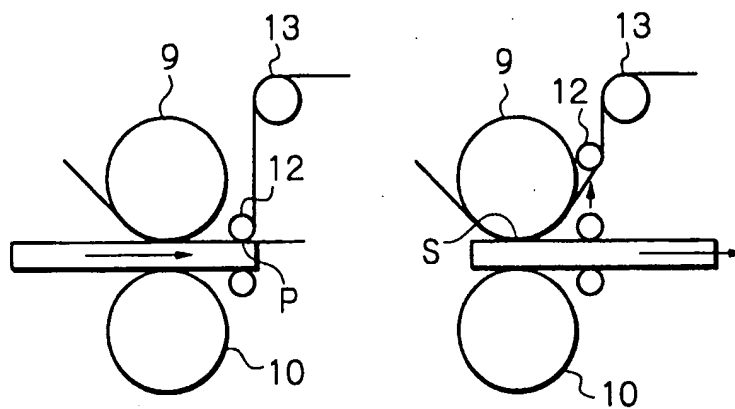


図 9



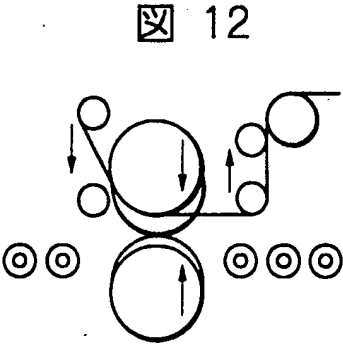
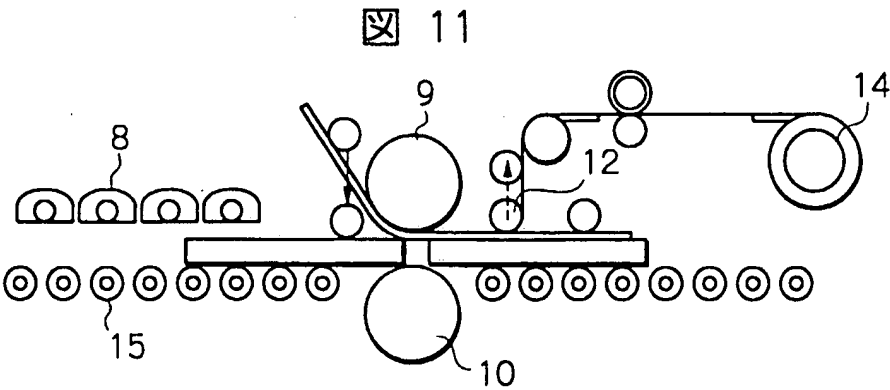
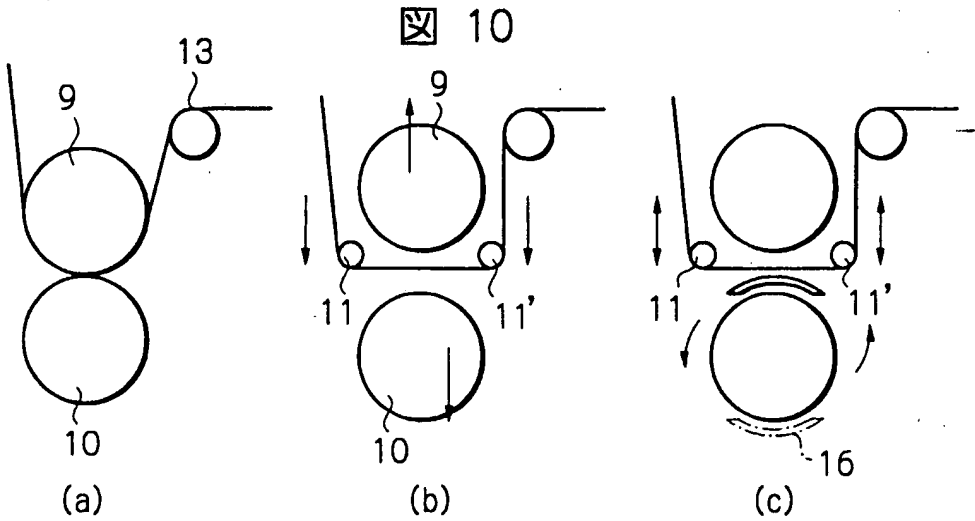
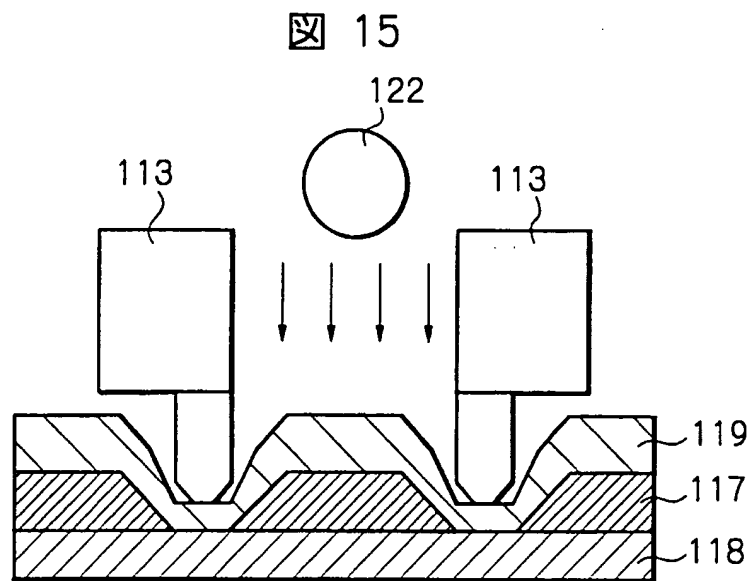
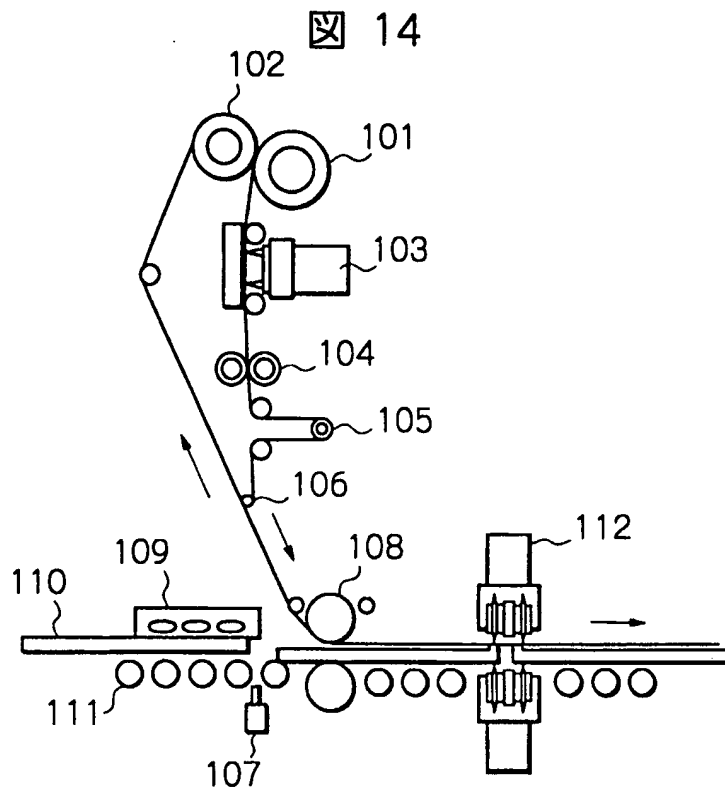


図 13

制御項目	状態	基板ラミネート状態					
		待機 t	開始 t	前端部	後端部	終了 t	待機 t
ラミネートロール 9	上昇	—	—	—	—	—	—
	加圧	—	—	—	—	—	—
ラミネートロール 10	下降	—	—	—	—	—	—
	加圧	—	—	—	—	—	—
待機用ガイドロール 11	上昇	—	—	—	—	—	—
	下降	—	—	—	—	—	—
剥機用ガイドロール 12	上昇	—	—	—	—	—	—
	下降	—	—	—	—	—	—
熱遮蔽板 16	遮蔽	—	—	—	—	—	—
	待機	—	—	—	—	—	—

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図 16

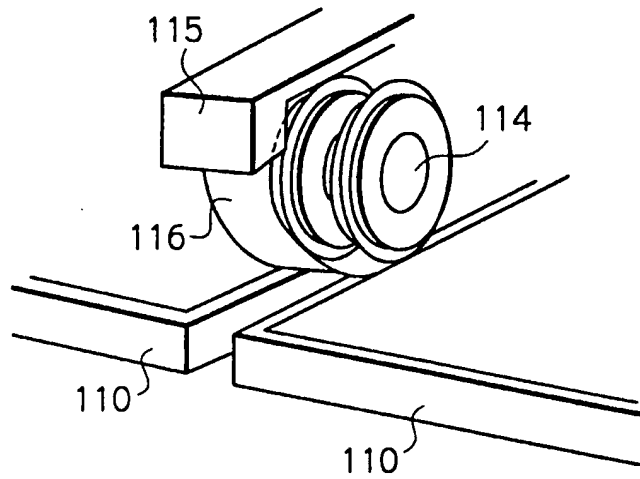


図 17

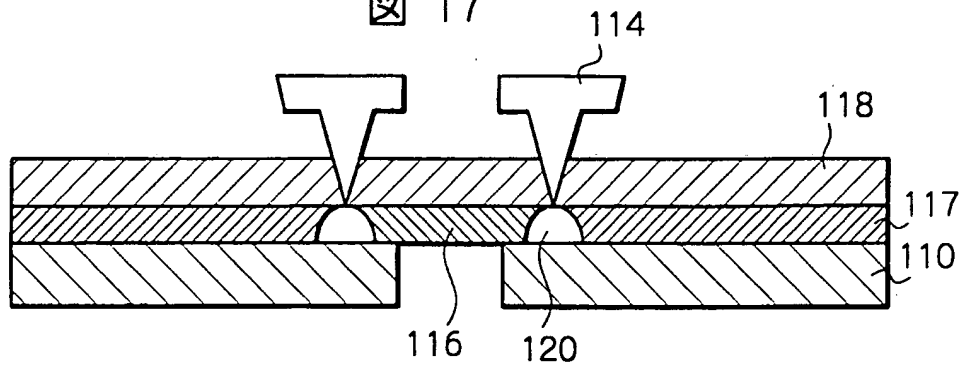
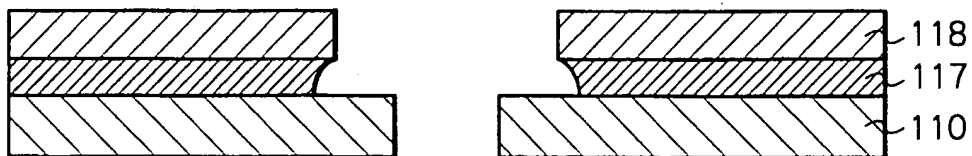


図 18



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP99/04939

## A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl<sup>6</sup> B05D 1/28, G03F 7/34, B29C 65/48

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl<sup>6</sup> B05D 1/28, G03F 7/34, B29C 65/48

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1926-1996	Toroku Jitsuyo Shinan Koho	1994-1999
Kokai Jitsuyo Shinan Koho	1971-1999	Jitsuyo Shinan Toroku Koho	1996-1999

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	JP, 08-160216, A (DAINIPPON PRINTING CO., LTD.), 21 June, 1996 (21.06.96) (Family: none)	1 2-10
A	JP, 05-080580, A (BROTHER INDUSTRIES, LTD.), 02 April, 1993 (02.04.93) (Family: none)	1-10

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search  
13 December, 1999 (13.12.99)Date of mailing of the international search report  
21 December, 1999 (21.12.99)Name and mailing address of the ISA/  
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

## A. 発明の属する分野の分類 (国際特許分類 (IPC))

Int. Cl<sup>6</sup> B05D 1/28, G03F 7/34, B29C 65/48

## B. 調査を行った分野

調査を行った最小限資料 (国際特許分類 (IPC))

Int. Cl<sup>6</sup> B05D 1/28, G03F 7/34, B29C 65/48

最小限資料以外の資料で調査を行った分野に含まれるもの

日本国実用新案公報 1926-1996

日本国公開実用新案公報 1971-1999

日本国登録実用新案公報 1994-1999

日本国実用新案登録公報 1996-1999

国際調査で使用した電子データベース (データベースの名称、調査に使用した用語)

## C. 関連すると認められる文献

引用文献の カテゴリー*	引用文献名 及び一部の箇所が関連するときは、その関連する箇所の表示	関連する 請求の範囲の番号
X A	J P, 08-160216, A (大日本印刷株式会社), 21. 6 月, 1996 (21. 06. 96) (ファミリーなし)	1 2-10
A	J P, 05-080580, A (ブラザー工業株式会社), 2. 4 月, 1993 (02. 04. 93) (ファミリーなし)	1-10

☐ C欄の続きにも文献が列挙されている。☐ パテントファミリーに関する別紙を参照。

## \* 引用文献のカテゴリー

「A」特に関連のある文献ではなく、一般的技術水準を示すもの

「E」国際出願日前の出願または特許であるが、国際出願日以後に公表されたもの

「L」優先権主張に疑義を提起する文献又は他の文献の発行日若しくは他の特別な理由を確立するために引用する文献 (理由を付す)

「O」口頭による開示、使用、展示等に言及する文献

「P」国際出願日前で、かつ優先権の主張の基礎となる出願

の日の後に公表された文献

「T」国際出願日又は優先日後に公表された文献であって出願と矛盾するものではなく、発明の原理又は理論の理解のために引用するもの

「X」特に関連のある文献であって、当該文献のみで発明の新規性又は進歩性がないと考えられるもの

「Y」特に関連のある文献であって、当該文献と他の1以上の文献との、当業者にとって自明である組合せによって進歩性がないと考えられるもの

「&amp;」同一パテントファミリー文献

国際調査を完了した日

13. 12. 99

国際調査報告の発送日

21.12.99

国際調査機関の名称及びあて先

日本国特許庁 (ISA/J P)

郵便番号100-8915

東京都千代田区霞が関三丁目4番3号

特許庁審査官 (権限のある職員)

村山 禎恒

3 F

9330

電話番号 03-3581-1101 内線 3351